

AMENDMENTS TO THE CLAIMS:

Claims 17-23 and 37-43 were pending at the time of the Office Action.

Claims 17, 22-23, 37, and 42-43 are amended.

Claims 18-21 and 38-41 are canceled.

New claims 46-54 have been added.

1-2. (Canceled)

3. (Withdrawn): A system comprising:

a plurality of redundant pairs of computer systems;

a plurality of actuators; and

a plurality of line replaceable units, each of the plurality of line replaceable units being coupled to one of the plurality of actuators, each of the plurality of line replaceable units being configured to receive synchronous digital control data from each pair of computer systems of the plurality of redundant pairs of computer systems,

wherein the plurality of redundant pairs of computer systems includes three redundant pairs of computer systems and wherein the plurality of line replaceable units include three or more line replaceable units.

4. (Canceled)

5. (Withdrawn): A system comprising:

a plurality of redundant pairs of computer systems;

a plurality of actuators; and

a plurality of line replaceable units, each of the plurality of line replaceable units being coupled to one of the plurality of actuators, each of the plurality of line replaceable units being configured to receive synchronous digital control data from each pair of computer systems of the plurality of redundant pairs of computer systems,

wherein the plurality of line replaceable units are configured to select the digital control data of one of the computer systems of a pair of the plurality of redundant pairs of computer systems and wherein each of the plurality of line replaceable units converts the selected digital control data into an analog signal and sends the analog signal to the corresponding actuator.

6. (Withdrawn): The system of Claim 5, wherein the digital control data is one of discrete or continuous variable data.

7. (Withdrawn): The system of Claim 6, wherein each line replaceable unit is configured to perform a validity check of each redundant pair of computer systems.

8. (Withdrawn): The system of Claim 7, wherein each line replaceable unit performs the validity check by determining if a freshness invalid signal and an error condition exists based on the corresponding digital control data and the freshness invalid signal.

9. (Withdrawn): The system of Claim 8, wherein each line replaceable unit determines if an error condition exists for each of the pairs of plurality of redundant pairs of computer systems by determining:

if a difference between the digital control data of each computer system of a pair is greater than a threshold value, then a first constant value is added to an error value;

if the difference between the digital control data from the computer systems of a pair of computer systems is less than the first threshold value, then a second constant value is subtracted from the error value;

if the error value is greater than a second threshold value, then the line replaceable unit indicates that an error condition exists with respect to the pair of computer systems; and

if the error value is at least equal to a third threshold value, then the line replaceable unit indicates that an error condition does not exist.

10. (Withdrawn): The system of Claim 9, wherein the line replaceable units repeat the determination of whether an error condition exists at a periodic rate.

11. (Withdrawn): The system of Claim 8, wherein the line replaceable units are configured to disable one or more of the redundant pairs of computer systems based on the determination of whether an error condition exists.

12. (Withdrawn): The system of Claim 3, wherein the plurality of redundant pairs of computer systems, the plurality of actuators, and the plurality of line replaceable units are included within an aircraft.

13. (Withdrawn): The system of Claim 12, wherein the aircraft includes control surfaces that a couple to one or more of the plurality of actuators.

14-15. (Canceled)

16. (Withdrawn): A method comprising:

generating synchronous digital control data at pair of computer systems of a plurality of redundant pairs of computer systems;

sending the generated synchronous digital control data to a plurality of line replaceable units;
selecting the digital control data of one of the computer systems of a pair of the plurality of redundant pairs of computer systems,
wherein the plurality of redundant pairs of computer systems includes three redundant pairs of computer systems and wherein the plurality of line replaceable units include three or more line replaceable units.

17. (Currently Amended): A method comprising:

generating synchronous digital control data at a pair of computer systems of a plurality of redundant pairs of computer systems, wherein the digital control data is one of discrete or continuous variable data;
sending the generated synchronous digital control data to a plurality of line replaceable units;
selecting the digital control data of one of the computer systems of the a pair of the plurality of redundant pairs of computer systems;
converting the selected digital control data into an analog signal; and
sending the analog signal to a corresponding actuator; and
checking validity of each redundant pair of computer systems, wherein checking the validity includes:
determining a freshness invalid signal; and
determining if an error condition exists based on the corresponding digital control data and the freshness invalid signal, and wherein determining if an error condition exists includes:

if a difference between the digital control data of each computer system of a pair is greater than a threshold value, adding a first constant value to an error value;

if the difference between the digital control data from the computer systems of a pair is less than the first threshold value, subtracting a second constant value from the error value;

if the error value is greater than a second threshold value, indicating that an error condition exists with respect to the pair of computer systems; and

if the error value is at least equal to a third threshold value, indicating that an error condition does not exist.

18. (Canceled)

19. (Canceled)

20. (Canceled)

21. (Canceled)

22. (Currently Amended): The method of Claim 17 ~~21~~, wherein determining if an error condition exists is repeated at a periodic rate.

23. (Currently Amended): The method of Claim 17 ~~20~~, further comprising disabling one or more of the redundant pairs of computer systems based on the determining if an error condition exists.

24-25. (Canceled)

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26. (Withdrawn): A computer program product residing on a computer-readable medium for performing a method comprising:

receiving synchronous digital control data from pair of computer systems of a plurality of redundant pairs of computer systems; and
selecting the digital control data of one of the computer systems of a pair of the plurality of redundant pairs of computer systems,
wherein the plurality of redundant pairs of computer systems includes three redundant pairs of computer systems and wherein the plurality of line replaceable units include three or more line replaceable units.

27. (Withdrawn): A computer program product residing on a computer-readable medium for performing a method comprising:

receiving synchronous digital control data from pair of computer systems of a plurality of redundant pairs of computer systems; and
selecting the digital control data of one of the computer systems of a pair of the plurality of redundant pairs of computer systems;
converting the selected digital control data into an analog signal; and
sending the analog signal to a corresponding actuator.

28. (Withdrawn): The product of Claim 27, wherein the digital control data is one of discrete or continuous variable data.

29. (Withdrawn): The product of Claim 28, further comprising checking validity of each redundant pair of computer systems.

30. (Withdrawn): The product of Claim 29, wherein checking the validity check includes:
determining a freshness invalid signal; and

determining if an error condition exists based on the corresponding digital control data and the freshness invalid signal.

31. (Withdrawn): The product of Claim 30, wherein determining if an error condition exists includes:

if a difference between the digital control data of each computer system of a pair is greater than a threshold value, adding a first constant value to an error value;

if the difference between the digital control data from the computer systems of a pair is less than the first threshold value, subtracting a second constant value from the error value;

if the error value is greater than a second threshold value, indicating that an error condition exists with respect to the pair of computer systems; and

if the error value is at least equal to a third threshold value, indicating that an error condition does not exist.

32. (Withdrawn): The product of Claim 31, wherein determining if an error condition exists is repeated at a periodic rate.

33. (Withdrawn): The product of Claim 30, further comprising generating a computer system disabling signal based on the determination if an error condition exists.

34-35. (Canceled)

36. (Withdrawn): A system comprising:

means for generating synchronous digital control data at pair of computer systems of a plurality of redundant pairs of computer systems;

means for sending the generated synchronous digital control data to a plurality of line replaceable units;

means for selecting the digital control data of one of the computer systems of a pair of the plurality of redundant pairs of computer systems,
wherein the plurality of redundant pairs of computer systems includes three redundant pairs of computer systems and wherein the plurality of line replaceable units include three or more line replaceable units.

37. (Currently Amended) A system comprising:

means for generating synchronous digital control data at a pair of computer systems of a plurality of redundant pairs of computer systems, wherein the digital control data is one of discrete or continuous variable data;

means for sending the generated synchronous digital control data to a plurality of line replaceable units;

means for selecting the digital control data of one of the computer systems of the a pair of the plurality of redundant pairs of computer systems;

means for converting the selected digital control data into an analog signal; and

means for sending the analog signal to a corresponding actuator;

means for checking validity of each redundant pair of computer systems, wherein the means for checking the validity includes:

means for determining a freshness invalid signal; and

means for determining if an error condition exists based on the corresponding digital control data and the freshness invalid signal, and wherein the means for determining if an error condition exists includes:

means for adding a first constant value to an error value, if a difference between the digital control data of each computer system of a pair is greater than a threshold value;

means for subtracting a second constant value from the error value,
if the difference between the digital control data from the
computer systems of a pair is less than the first threshold value;
means for indicating that an error condition exists with respect to
the pair of computer systems, if the error value is greater than a
second threshold value; and
means for indicating that an error condition does not exist, if the
error value is at least equal to a third threshold value.

38. (Canceled)

39. (Canceled)

40. (Canceled)

41. (Canceled)

42. (Currently Amended): The system of Claim 37 41, wherein the means for determining if an error condition exists repeats at a periodic rate.

43. (Currently Amended): The system of Claim 37 42, further comprising means for disabling one or more of the redundant pairs of computer systems based on the means for determining if an error condition exists.

44-45. (Canceled)

46. (New) A method comprising:

generating synchronous digital control data at a pair of computer systems of a plurality of redundant pairs of computer systems, wherein the digital control data is one of discrete or continuous variable data;

sending the generated synchronous digital control data to a plurality of line replaceable units;

selecting the digital control data of one of the computer systems of the pair of the plurality of redundant pairs of computer systems;

converting the selected digital control data into an analog signal;

sending the analog signal to a corresponding actuator;

checking validity of each redundant pair of computer systems, wherein checking the validity check includes:

determining a freshness invalid signal; and

determining if an error condition exists based on the corresponding digital control data and the freshness invalid signal; and

disabling one or more of the redundant pairs of computer systems based on the determining if an error condition exists.

47. (New) The method of Claim 46, wherein determining if an error condition exists includes:

if a difference between the digital control data of each computer system of a pair is greater than a threshold value, adding a first constant value to an error value;

if the difference between the digital control data from the computer systems of a pair is less than the first threshold value, subtracting a second constant value from the error value;

if the error value is greater than a second threshold value, indicating that an error condition exists with respect to the pair of computer systems; and
if the error value is at least equal to a third threshold value, indicating that an error condition does not exist.

48. (New) The method of Claim 47, wherein determining if an error condition exists is repeated at a periodic rate.

49. (New) A system comprising:

means for generating synchronous digital control data at a pair of computer systems of a plurality of redundant pairs of computer systems, wherein the digital control data is one of discrete or continuous variable data;

means for sending the generated synchronous digital control data to a plurality of line replaceable units;

means for selecting the digital control data of one of the computer systems of the pair of the plurality of redundant pairs of computer systems;

means for converting the selected digital control data into an analog signal;

means for sending the analog signal to a corresponding actuator;

means for checking validity of each redundant pair of computer systems, wherein the

means for checking the validity includes:

means for determining a freshness invalid signal; and

means for determining if an error condition exists based on the corresponding digital control data and the freshness invalid signal; and

means for disabling one or more of the redundant pairs of computer systems based on the means for determining if an error condition exists.

50. (New) The system of Claim 49, wherein the means for determining if an error condition exists includes:

means for adding a first constant value to an error value, if a difference between the digital control data of each computer system of a pair is greater than a threshold value;

means for subtracting a second constant value from the error value, if the difference between the digital control data from the computer systems of a pair is less than the first threshold value;

means for indicating that an error condition exists with respect to the pair of computer systems, if the error value is greater than a second threshold value; and

means for indicating that an error condition does not exist, if the error value is at least equal to a third threshold value.

51. (New) The system of Claim 50, wherein the means for determining if an error condition exists repeats at a periodic rate.

52. (New) A method comprising:

generating synchronous digital control data at a pair of computer systems of one or more redundant pairs of computer systems;

sending the generated synchronous digital control data to one or more line replaceable units;

converting at least a portion of the digital control data into an analog signal;

checking validity of at least some of the redundant pairs of computer systems, wherein checking the validity includes:

determining a freshness invalid signal; and

determining if an error condition exists based on the corresponding digital control data and the freshness invalid signal; and
if validity is confirmed, sending the analog signal to a corresponding actuator.

53. (New) The method of Claim 52, wherein determining if an error condition exists includes at least one of:

if a difference between the digital control data of each computer system of a pair is greater than a threshold value, adding a first constant value to an error value;
if the difference between the digital control data from the computer systems of a pair is less than the first threshold value, subtracting a second constant value from the error value;
if the error value is greater than a second threshold value, indicating that an error condition exists with respect to the pair of computer systems; and
if the error value is at least equal to a third threshold value, indicating that an error condition does not exist.

54. (New) The method of Claim 52, further comprising disabling one or more of the redundant pairs of computer systems based on the determining if an error condition exists